

SUNGLASSES & MELANOMA

IS THERE A CONNECTION?

SUNGLASSES AND SPECTACLES

THEY NOT ONLY AFFECT
YOUR EYES, THEY AFFECT
YOUR WHOLE BODY.

SOME RESEARCH NOW
LINKS SUNGLASSES WITH
SKIN CANCER.

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Since the 1960s the incidence of melanoma has risen at an alarming rate,¹ despite the educational programs and considerable efforts intended to control it. According to the conventional wisdom on the subject, sunlight is the cause of melanoma and thus the way to avoid

melanoma is to avoid the sun. Consistent with this disposition, we are exhorted either to stay out of the sun or should we have to go in it, to arm ourselves with sunscreens and sunglasses as the best protection against melanoma.

Contrary to the orthodox position on this subject, we submit that little more than half of the presented cases of melanoma can be explained solely as 'sun-caused'. The conventional interpretation has no coherent hypothesis to offer by way of explaining the remainder of these cases, some of which involve either minimal exposure to sunlight or melanomas in parts of the body not exposed to the sun. On the basis of a multi-disciplinary survey of the world literature, it is our view that a number of environmental factors, including exposure to artificial light sources and electromagnetic radiation contribute to the unabated rise in the incidence of melanoma. We have argued elsewhere for these views, and shall not repeat the arguments here.² The thesis we propose to defend in this paper is that the wearing of sunglasses may in some circumstances unwittingly be either initiating or promoting melanoma.

In a peculiar sense, our thesis is a logical extension of our view that the increasing exposure to artificial light is disruptive of some of the 'natural immune mechanisms' within the body which would otherwise protect us against melanoma. In support of this interpretation is consistent evidence which reveals a higher incidence of melanoma among indoor workers than outdoor workers.³ A characteristic of indoor environments is that the eye receives only artificial light. By modifying the sunlight entering our eyes, the wearing of sunglasses similarly results in the conversion of a natural light source into an artificial one. The result is that the eye is also receiving artificial light when one is out of doors. The possible connection between artificial light and skin cancer is subtle and we make no pretense that it is yet fully elucidated. A substantial body of literature is accumulating, however, which suggests that the link may be far more important than first assumed.

It has been known for some time that light entering the eyes affects the function of the pineal gland and the production of pineal melatonin.⁴ This gland and its hormones have been associated with several types of cancer,⁵ and removal of the pineal gland has been shown to enhance carcinogenesis.⁶ Melatonin is also associated with the activation of T lymphocytes, and melatonin can either stimulate or inhibit cell proliferation, apparently depending on the amount present. It is also clear that the photoperiodic environment of exposure may possibly be quite a significant factor in the regulation of melatonin.⁷

Early research showed that light in the visible region was responsible for pineal stimulation in rats⁸. Recent research with other mammals, however, suggests that UV wavelengths as short as 30.5nm (UVB) also affect pineal function.⁹

It has been established that the female ovulatory cycle and associated oestrogen levels are regulated and normalised by light.¹⁰ It has also been shown that the female hormone modifies the activity of melanoma cells,¹¹ though there is considerable debate whether this enhances or inhibits the replication of melanoma cells. The production of Vitamin D appears also to be regulated by the frequency of light entering the eyes,¹² and evidence is available which strongly indicated that this vitamin may play an important role in inhibiting melanoma.¹³

The problem is that sunglasses significantly distort the spectral distribution and intensity of the natural sunlight entering our eyes. This being so, although sunglasses may protect against the harmful effects of excessive light exposure, they have the potential to affect adversely the regulation of the various hormone systems involved in protection against melanoma. The extent to which light entering our eyes is distorted and in that sense made artificial is illustrated by our test studies of the absorbance spectra of various eyeglasses. The results of the tests are shown below.

Notice that regular sunglasses substantially reduce light intensity in both the visible region and the UV region. Plain glass on the other hand only begins to absorb light below 320nm in the case of UV treated one. Since the UV wavelengths blocked are precisely those which may be particularly important in respect of the photo-optic stimulation of the pineal gland and the regulation of its hormones, the chronic use of sunglasses, along with some eyeglasses, may serve inadvertently to increase the risk of melanoma.

REFERENCES:

1. Elwood, J.M. et.al. "Trends in Incidence and Mortality from Cutaneous Melanoma in England and Wales", The Menzies Foundation Transactions, Vol.15, 1989, p.131.
2. Ashton, J.F. and Laura, R.S. "Environmental Factors and the Melanoma Enigma", Search, Vol.21, No.7, 1991, pp.217-218; see also Ashton, J.F. and Laura, R.S. "Let There Be Light", Search, Vol.21, No.8, December 1990, p.268; Laura, R.S. and Ashton, J.F., "Challenging the Sunlight-Skin Cancer

- Connection", Nexus, Vol.2, No.#, May-June 1991, pp.34-37; Laura, R.S. and Ashton, J.F., "Shedding Some Light on the Melanoma Debate", The Vitamin Connection, July 1991, pp.2-5.
3. Lee, J.A.H. and Strickland, D. "Malignant Melanoma: Social Status and Outdoor Work", British J. Cancer, Vol.41, 1980, pp.757-763.
4. Hollwick, F. The Influence of Ocular Light Perception on Metabolism in Man and in Animal. New York, Springer-Verlag, 1979. See also Wurtman, R.J. "Effects of Light on the Human Body", Scientific American, July 1975, pp.69-77, and Brainard, G.C. et.al. "Effects of Light Wavelengths on the Suppression of Nocturnal Plasma Melatonin in Normal Volunteers", Ann. New York Acad. Sci., Vol.435, 1985, pp.376-378.
5. Gupta, D., Attanasio, A., and Reiter, R.J. (Eds.). The Pineal Gland and Cancer, Tubingen, West Germany, Brain Research Promotion, 1988. See also Cohen, M. et.al. "Role of pineal gland in aetiology and treatment of breast cancer", The Lancet, (ii), 1978, pp. 814-816.
6. Tamarlnin, et.al. "Melatonin inhibitions and pinealectomy enhancement of 7,12-dimethylbenz (a) anthracene induced mammary tumors in the rat." Cancer Research, Vol.41, 1981, pp.4432-4436.
7. Gupta, D. et.al., op.cit.
8. Wurtman, R.J. "The Action of Light on Man and Mammals: Normal Physiologic and Pathologic Extracutaneous Effects" in Fitzpatrick, T.B. (ed), Sunlight and Man, Tokyo, University of Tokyo Press, 1974, pp.231-246. See also Wurtman, R.J., 1975 (op.cit.)
9. Brainard, G.C. et.al. "Near-Ultraviolet Radiation Suppresses Pineal Melatonin Content", Endocrinology, Vol. 119, No.5, 1986, pp.2201-2205.
10. Luce, G.C. Body Time, Melbourne, Sun Books. 1972, pp.241-2.
11. Anon. "Possible Oestrogen Use Against Melanoma", Laboratory News, Sydney, August 1989, p12.
12. Stumpf, W.E. "The Endocrinology of Sunlight and Darkness. Complementary Roles of Vitamin D and Pineal Hormones", Naturwissenschaften, Vol.75, No.5, 1988, p.247.
13. Colston, K. et.al. "1, 25-Dihydroxyvitamin D3 and Malignant Melanoma: The Presence of Receptors and Inhibition of Cell Growth in Culture", Endocrinology, Vol.108, No.3, 1981, pp.1083-1086. (See also reference in Aust. Doctors Weekly article).

